Executive Session
Director's CD-3b Review of the MINERvA Project

June 11-12, 2007

L. Edward Temple, Jr.

Agenda for Exec Session

- Charge to Reviewers
- Review Agenda
- DOE O 413.3 Critical Decision Requirements etc
- Cost/Schedule Considerations
- Reporting Out Structure
  - Findings, Comments, and Recommendations
- Assignments
  - Technical Reviewer Assignments
  - Breakout Groupings
- Discussion

Charge

This charge is for the Director's CD-3b Review of MINERvA. This project was given CD-1/2/3a approval by Dr. Staffin, the Acquisition Executive, on March 30, 2007. The project is proceeding with detailed design and will be requesting "Approval to Start Full Construction" CD-3b late this fiscal year. A DOE/SC/OHEP CD-3b Review is anticipated in August to allow for an ESAAB approval in time to utilize FY08 MIE appropriations as soon as they are available. One goal of this Director's Review is to help assure MINERvA will be ready for the OHEP Review.

In carrying out this charge, please respond to the following questions:

1. Are the project's cost, schedule, and technical baselines appropriate and consistent with those approved in March 2007? Is there adequate progress to meet the baseline objectives?

2. Are the designs of the technical systems sufficiently mature to support the hardware procurements planned in FY 2008?

3. Is there adequate contingency (cost and schedule) to address the risks inherent in the remaining work and is it being properly managed? Is the contingency supported by and consistent with an appropriate project-wide risk analysis?

4. Is the project being managed (e.g., properly organized, adequately staffed) as needed to proceed with construction? Is there adequate support from Fermilab and the MINERvA collaborating institutions to proceed with construction?

5. Are ES&H aspects being properly addressed?

6. Has the project responded appropriately to recommendations from prior DOE/SC and Fermilab Director's Reviews?

7. Has the MINERvA project provided satisfactory responses to the attached CD-3 "Scorecard?"

Please respond to these questions in a Closeout Session with the MINERvA team and Fermilab management and submit a written report within a few weeks of the completion of the review.

Charge Attachment

4.0 SCOPE OF REVIEW FOR CONSTRUCTION OR EXECUTION READINESS
(In support of CD–3)

The purpose of the Construction or Execution Readiness Review is to assess the readiness for construction or execution and to confirm the completeness and accuracy of the Performance Baseline. The Scope of review has several elements relative to construction readiness, but retains many of the elements contained in the Performance Baseline Review. The Required Documentation is also presented below.

4.1 Scope of Review
For each of the review elements, the following are suggested lines of inquiry for the IPR Team to address.

1. Final Drawings and Specifications.
Assess completeness and quality of drawings and design specifications. This is typically accomplished by reviewing selected construction elements or systems, including the key project elements posing the more difficult construction challenges. Assess whether bid packages are sufficiently clear and well defined as to be ready for bid.

2. Construction/Execution Planning.
Assess adequacy of construction/project execution planning and staffing. Assess logistics including interface with operating facilities, infrastructure interfaces, adequacy of lay-down areas, temporary construction facilities, security and badging readiness, and other logistical elements. Federal and contractor staffing should also be reviewed to ensure adequate oversight of the work, including safety, performance, and quality.

3. Resource Loaded Schedule.
Review the Resource Loaded Schedule to ensure that it is consistent with the approved Performance Baseline at CD-2. Also assess the reasonableness of the schedule relative to the critical path.

4. Final Design Functions and Requirements/Site Final Design Review.
Assess whether all final design functions and requirements are reflected in the Performance Baseline, including safety and external requirements such as permits, licenses, and regulatory approvals. Also, assess whether all required changes from the Site Final Design Review are incorporated into the Performance Baseline.

5. Risk Management.
Assess whether the risk assessment has been updated, as appropriate, to address any new risks identified in final design. Assess whether cost and schedule contingency remains sufficient for project risks.

Charge Attachment continued

6. Value Management/Engineering.
Assess the application of Value Management/Engineering during Final Design, and if results have been incorporated into the Performance Baseline.

7. Acquisition Strategy.
Review the Acquisition strategy to determine if there have been any significant changes and if the acquisition approach continues to represent the best value to the government.

8. Project Execution Plan.
Review the Project Execution Plan and determine if it reflects and supports the way the project and construction effort is being managed. It should be updated to reflect any changes as a result of Final Design and be consistent with the other project documents.

9. Project Controls/Earned Value Management System.
Assess whether all appropriate project control systems and reporting requirements are in place and are being properly used to report project status.

10. Integrated Project Team.
Assess whether the staffing level is appropriate and determine if appropriate disciplines are included in the Integrated Project Team. Identify any deficiencies in the Integrated Project Team that could hinder successful construction or execution.

4.2 Required Documentation

In general, the following documents are required for the Construction or Execution Readiness Review. Other associated material may be requested to ensure a complete and accurate review is performed.

- Final Design Drawings and Specifications
- Results of and Responses to Site Final Design Review
- Construction Planning Document
- Project Execution Plan
- Detailed Resource Loaded Schedule
- Detailed Cost Estimate
- System Functions and Requirements Document
- Risk Management Plan/Assessment
- Safety Documentation
- Acquisition Strategy
- Value Management/Engineering Report

* Funding Profile

Agenda

Monday, June 11, 2007 – Racetrack (WH7X)

8:00 – 8:30 AM		Executive Session	Ed Temple
8:30 – 8:45 AM	15	Introduction	Hugh Montgomery
8:45 – 9:45 AM	60	Project Overview	Deborah Harris
9:45 – 10:30 AM	45	Scintillator Extrusions, WLS Fiber and Clear Fiber Cables WBS 1 – Scintillator Extrusions WBS 2 – WLS Fiber WBS 4 – Clear Fiber Cables	Kevin McFarland*
10:30 – 10:45 AM	15	BREAK	
10:45 – 11:30 AM	45	PMT's , T Boxes and Electronics & DAQ WBS 5 – PMT Boxes WBS 6 – PMT Procurement and Testing WBS 7 – Electronics & DAQ	Ron Ransome
11:30 – 12:15 PM	45	Plane Assembly, Outer Detector Frame, Absorbers, Stand and Module Assembly WBS 3 – Scintillator Plane Assembly WBS 8 – Frame Absorbers & Stand WBS 9 – Module & Veto Wall Assembly	Bob Bradford*
12:15 – 12:30 PM	15	Discussion	
12:30 – 1:30 PM	60	LUNCH (WH2X)	
1:30 – 3:00 PM	90	Follow-up Discussion	Deborah Harris, Kevin McFarland*, Ron Ransome, Bob Bradford*, Committee
3:00 – 3:15 PM	15	BREAK	
3:15		Executive Session (Comitium – WH2SE)	Committee

*Indicates attendance by Video Conference.

Tuesday, June 12, 2007 - Racetrack (WH7X)

8:30 – 10:00 AM		Writing Closeout Slides / Report – Breaks taken as needed	Committee
10:30 – 12:00 PM		Closeout Dry Run with working lunch (Comitium – WH2SE)	Committee
1:00 PM		Closeout	All

DOE O 413.3 CD Req'mnts

PROJECT ACQUISITION PROCESS AND CRITICAL DECISIONS

Project Planning Phase		Project Execution Phase			Mission
Preconceptual Planning	Conceptual Design	Preliminary Design	Final Design	Construction	Operations

CD-0	CD-1	CD-2	CD-3	CD-4
Approve Mission Need	Approve Preliminary Baseline Range	Approve Performance Baseline	Approve Start of Construction	Approve Start of Operations or Project Closeout

See Page 2 for CDs on Environmental Restoration and Facility Disposition Projects

CD-0	CD-1	CD-2	CD-3	CD-4
Actions Authorized by Critical Decision Approval				
• Proceed with conceptual design using program funds • Request PED funding	• Allow expenditure of PED funds for design	• Establish baseline budget for construction • Continue design • Request construction funding	• Approve expenditure of funds for construction	• Allow start of operations or project closeout
Critical Decision Prerequisites				
• Justification of mission need document • Acquisition Strategy • Preconceptual planning • Mission Need Independent Project Review	• Acquisition Plan • Conceptual Design Report • Preliminary Project Execution Plan and baseline range • Project Data Sheet for design • Verification of mission need • Preliminary Hazard Analysis Report	• Preliminary design • Review of contractor project management system • Final Project Execution Plan and performance baseline • Independent cost estimate • National Environmental Policy Act documentation • Project Data Sheet for construction • Draft Preliminary Safety Analysis Report • Performance Baseline External Independent Review	• Update Project Execution Plan and performance baseline • Final design and procurement packages (**) • Verification of mission need • Budget and congressional authorization and appropriation enacted • Approval of Safety documentation • Execution Readiness Independent Review	• Operational Readiness Review and acceptance report • Project transition to operations report • Final Safety Analysis Report **After CD-4** **Closeout** • Project closeout report

(**) To the degree appropriate to initiate construction as scheduled.

CD-2 and CD-3 Review Criteria

(Excerpt from DOE M 413.3-1 (3-28-03))

Performance Baseline Review (CD-2)	Construction or Execution Readiness Review (CD-3)
Key review elements for a Performance Baseline Review are: - System Functions and Requirements - Preliminary Design and Design Review - Work Breakdown Structure - Resource Loaded Schedule - Total Project Cost and Project Schedule - Risk Management - Project Execution Plan - Acquisition Strategy - Integrated Project Team - Hazards Analysis - Value Management/Engineering - Project Controls/Earned Value Management System	Key review elements for a Construction or Execution Readiness Review are: - Final Design Functions and Requirements/Site Final Design Review - Final Drawings and Specifications - Construction/Execution Planning - Resource Loaded Schedule - Risk Management - Project Execution Plan - Acquisition Strategy - Integrated Project Team - Value Management/Engineering - Project Controls/Earned Value Management System
The following documents are to available and assessed: - System Functions and Requirements Document (also referred to as the “Design-to” requirements or Design Criteria) - Results of and Responses to Site Preliminary Design Review - Detailed Resource Loaded Schedule - Detailed Cost Estimate - Risk Management Assessment - Project Execution Plan - Acquisition Strategy - Hazards Analysis - *Preliminary Safety Analysis Document*	The following documents are to available and assessed: - System Functions and Requirements Document - Final Design Drawings and Specifications - Results of and Responses to Site Final Design Review - Construction Planning Document - Detailed Resource Loaded Schedule - Detailed Cost Estimate - Risk Management Assessment - Project Execution Plan - Acquisition Strategy - Safety Documentation

Cost/Schedule Review Guidance

- Does the current baseline cost and schedule make sense?
- How is the MINERvA team progressing against the plan?
  - Are they performing on schedule and within cost?
- What Change Requests have been processed?

Report Outline and Reviewer Assignments

Executive Summary	Ed Temple
1.0 Introduction	Dean Hoffer
2.0 Technical	
2.1 Science	Jon Urheim,
2.2 Scintillator Extrusions, WLS Fiber and Clear Fiber Cables (WBS 1, 2 & 4) WBS 1 – Scintillator Extrusions WBS 2 – WLS Fiber WBS 4 – Clear Fiber Cables	Jon Urheim
2.3 Plane Assembly, Outer Detector Frame, Absorbers, Stand and Module Assembly (WBS 3, 8 & 9) WBS 3 – Scintillator Plane Assembly WBS 8 – Frame Absorbers & Stand WBS 9 – Module & Veto Wall Assembly	Mike Crisler,
2.4 PMT's and PMT Boxes (WBS 5 &6) WBS 5 – PMT Boxes WBS 6 – PMT Procurement and Testing	Mike Lindgren,
2.5 Electronics & DAQ (WBS 7)	Hogan Nguyen,
3.0 Project Management (WBS 10)	
3.1 Cost	Marc Kaducak, Dean Hoffer
3.2 Schedule	Dean Hoffer, Marc Kaducak
3.3 Management	Elaine McCluskey, Dean Hoffer, Ed Temple

Charge Questions

4.0 Charge Questions	
4.1 Are the project's cost, schedule, and technical baselines appropriate and consistent with those approved in March 2007? Is there adequate progress to meet the baseline objectives?	Mike Lindgren
4.2 Are the designs of the technical systems sufficiently mature to support the hardware procurements planned in FY 2008?	Jon Urheim
4.3 Is there adequate contingency (cost and schedule) to address the risks inherent in the remaining work and is it being properly managed? Is the contingency supported by and consistent with an appropriate project-wide risk analysis?	Marc Kaducak
4.4 Is the project being managed (e.g., properly organized, adequately staffed) as needed to proceed with construction? Is there adequate support from Fermilab and the MINERvA collaborating institutions to proceed with construction?	Elaine McCluskey
4.5 Has the project responded appropriately to recommendations from prior DOE/SC and Fermilab Director's Reviews?	Elaine McCluskey
4.6 Are ES&H aspects being properly addressed?	Mike Crisler
4.7 Has the MINERvA project provided satisfactory responses to the attached CD-3 "Scorecard?"	Elaine McCluskey

Reporting Structure

- Review findings, comments, and recommendations should be presented in writing at a closeout with the Collaboration and Fermilab management.
- Section for each “Level 2” WBS plus Cost, Schedule, Management and Science sections.

Findings, Comments, and Recommendations

- Findings
  - Findings are statements of fact that summarize noteworthy information presented during the review.
- Comments
  - Comments are judgment statements about the facts presented during the review. The reviewers' comments are based on their experiences and expertise.
  - The comments are to be evaluated by the project team and actions taken as deemed appropriate.
- Recommendations
  - Recommendations are statements of actions that should be addressed by the project team.
  - A response to the recommendation is expected and that the actions taken would be reported on during future reviews.

Examples of Findings, Comments, and Recommendations

[NOvA CD-1 Director's Review @ Fermilab]

Findings

- Adhesive choice has an impact on work schedule and ventilation system design. The baseline adhesive was listed as 3M2216 and was said to have a safety factor of 5 for buckling. However a Devcon adhesive was discussed a great deal also. The Devcon adhesive has a sheer strength which was approximately 150% better but it contained a toxic solvent which the 3M2216 did not.

- An adhesive dispenser will be used to apply the adhesive to attach the modules together and to attach the blocks together. The adhesive dispenser can't be defined until the adhesive is chosen.

Examples of Findings, Comments, and Recommendations (continued)

[NOvA CD-1 Director's Review @ Fermilab]

Comment

- Adhesive needs to be determined as quickly as possible to meet timelines. If the 3M2216 meets the design SF of 5 for buckling and over a SF of 4 for shear stress between the planes it seems like it should be used over the Devcon adhesive which has toxic solvent vapors. Adhesive choice will affect assembly and the building (exhaust required) requirements.

Recommendation

1. Determine which adhesive to use as soon as possible. This affects building design and assembly time.

Project's Cost & Contingency Estimate

MINERvA Detailed Cost Estimate — June 11, 2006

	WBS		Base w/Indirects (AY M$)			Contingency Estimate			Contingency (AY M$)	Base+ Contingency (AY M$)
			Labor	M&S	Total	Labor	M&S	Total		
MIE	1.0	Scintillator Extrusion	0.27	0.08	0.35	25%	29%	26%	0.09	0.44
	2.0	WLS Fibers	0.34	0.32	0.66	21%	8%	15%	0.10	0.75
	3.0	Scintillator Plane Assembly	0.61	0.21	0.81	30%	48%	34%	0.28	1.09
	4.0	Clear Fiber Cables	0.70	0.39	1.09	37%	13%	28%	0.31	1.40
	5.0	Photomultiplier Tube Boxes	0.41	0.14	0.55	30%	27%	29%	0.16	0.71
	6.0	Photomultiplier Tubes	0.01	1.07	1.08	36%	33%	33%	0.36	1.44
	7.0	Electronics and DAQ	0.10	0.87	0.96	40%	34%	34%	0.33	1.29
	8.0	Frames, Absorbers, and Stand	0.10	0.55	0.65	20%	25%	24%	0.16	0.81
	9.0	Module Assembly and Veto Wall	0.23	0.16	0.39	21%	37%	28%	0.11	0.49
	10.0	Project Management	1.24	0.08	1.32	55%	340%	72%	0.95	2.27
		Total MIE:	**4.00**	**3.86**	**7.86**	**38%**	**35%**	**36%**	**2.84**	**10.70**
OPC		R&D	3.08	1.68	4.76	24%	21%	23%	1.09	5.85
		Total OPC:	**3.08**	**1.68**	**4.76**	**24%**	**21%**	**23%**	**1.09**	**5.85**
		TPC:	**7.08**	**5.54**	**12.62**	**32%**	**31%**	**31%**	**3.93**	**16.55**

	WBS		Base w/Indirects (AY M$)			Contingency Estimate			Contingency (AY M$)	Base+ Contingency (AY M$)
			Labor	M&S	Total	Labor	M&S	Total		
R&D	1.0	Scintillator Extrusion	0.20	0.01	0.22	15%	27%	16%	0.03	0.25
	2.0	WLS Fibers	0.12	0.08	0.20	24%	16%	21%	0.04	0.24
	3.0	Scintillator Plane Assembly	0.31	0.22	0.53	28%	27%	27%	0.14	0.67
	4.0	Clear Fiber Cables	0.35	0.16	0.51	41%	20%	34%	0.18	0.69
	5.0	Photomultiplier Tube Boxes	0.16	0.11	0.27	10%	13%	11%	0.03	0.30
	6.0	Photomultiplier Tubes	0.06	0.25	0.30	18%	11%	13%	0.04	0.34
	7.0	Electronics and DAQ	0.79	0.39	1.18	27%	14%	23%	0.27	1.45
	8.0	Frames, Absorbers, and Stand	0.25	0.24	0.49	24%	26%	25%	0.12	0.62
	9.0	Module Assembly and Veto Wall	0.34	0.19	0.52	20%	27%	23%	0.12	0.64
	10.0	Project Management	0.51	0.03	0.54	15%	150%	23%	0.12	0.66
		Total R&D:	**3.08**	**1.68**	**4.76**	**24%**	**21%**	**23%**	**1.09**	**5.85**

v2

Reviewer Write-ups

- Write-up template is posted on Director's Review Webpage. http://www.fnal.gov/directorate/OPMO/Projects/MINERvA/DirRev/2007/06_11/CloseoutPresentationsMINERvA06-12-07template.doc
- Write-ups are to be sent to Marilyn Smith at oboe@fnal.gov prior to 8:30 AM on Thursday, August 3 for the Closeout Dry Run
- A final report will be issued within 2 weeks after the closeout.

Discussion

- Questions and Answers